UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Louis P. Herzberg
Intellectual Property Law Dept.
IBM Corporation
P.O.Box 218
Yorktown Heights, NY 10598

EXAMINER
LAROSE, COLIN M

ART UNIT	PAPER NUMBER
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/636,002	BRAUDAWAY ET AL.
	Examiner	Art Unit	
	Colin M. LaRose	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12,13,15 and 16* is/are allowed.

6)☒ Claim(s) *1-11 and 17-21* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Claim Objections

1.   Claim 14 is objected to because of the following informality: it appears this claim should depend from claim 12 and not claim 1. This is presumed to be a typo. Appropriate correction is required.

2.   Claim 12 is objected to because of the following informality: in the "forming" limitation, "enlarged of reduced" should be changed to "enlarged or reduced."

3.   Claim 2 is objected to because of the following informality: "an nearly" should be changed to "as nearly"

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5.   Claims 9 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6.   Claim 9 improperly incorporates the "functions" of claim 7. Claim 7 is an apparatus claim and is defined by "means" rather than "functions" as in a method claim. Futhermore, it is unclear how computer program code could implement, or "effect," means recitations. Appropriate correction or clarification is required.

7.   Claim 19 is a "method" claim that improperly depends from a "device" claim (i.e. claim 16). Appropriate correction is required.

Claim Rejections - 35 USC § 102

8.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9.   Claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by "Geometric

Distortion Correction Through Image Normalization" by Alghoniemy et al. ("Alghoniemy")..

Regarding claim 17, Alghoniemy discloses a method (decoder of figure 1) comprising

detecting a watermark imbedded in a candidate image employing a bounding rectangle,

including the steps of:

recalling dimensions of the bounding rectangle used to produce a resized source image

from which the candidate image was produced ("image normalization" uses the process in § 2.2

to determine the horizontal and vertical dimensions, al_x and bl_y, of a bounding rectangle

corresponding to the dimensions used for normalizing the image for watermark embedding);

forming a resized image by resizing the horizontal and vertical dimensions of said

candidate image by a common factor, so that the resized image is a largest replica of said

candidate image fitting entirely within the bounding rectangle (equation (10) resizes the image so

that it has dimensions al_x and bl_y, where the scaling factors a and b may be common – i.e. have

the same value – in the case of symmetric scaling – see § 2.2)

reproducing the watermark suspected of being in the candidate image (figure 1:

"watermark detection" extracts a putative watermark); and

attempting detection of the watermark in the candidate image (figure 1: "watermark

detection" represents an attempt to detect the watermark).

Regarding claim 18, Alghoniemy discloses employing results obtained from the step of

attempting (i.e. the results are used to determine whether the image is authentic).

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

11.   Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent

7,095,873 by Venkatesan et al. ("Venkatesan") in view of "Geometric Distortion Correction

Through Image Normalization" by Alghoniemy et al. ("Alghoniemy").

Regarding claims 1 and 7, Venkatesan discloses a method (figure 6) and apparatus (figure

5) comprising steps/means for:

obtaining a digitized image to be protected by a watermark (610, figure 6);

resizing the image to a fixed (rectangular) size having known horizontal and vertical

dimensions (612, figure 6, and column 14/65-66: image is normalized to a fixed size via bicubic

interpolation); and

imbedding said watermark into said resized image to form a watermarked image (650, figure 6).

While Venkatesan teaches resizing the image to a fixed size, Venkatesan does not expressly disclose the step of:

forming a resized image by resizing the horizontal dimension by a horizontal factor and the vertical dimension by a vertical factor, so that the resized image is a largest replica of said digitized image fitting entirely within the bounding rectangle (i.e. the horizontal and vertical dimensions).

Alghoniemy discloses a method (see figure 1) for normalizing an image prior to embedding a watermark therein. Like Venkatesan, Alghoniemy normalizes the image to a fixed size before the embedding process. In § 2.2, Alghoniemy specifies a bounding rectangle of a normalized image having dimensions al_x and bl_y, which correspond to scaled horizontal and vertical dimensions of the original image. Then, a resized image is formed by resizing the horizontal dimension by a horizontal factor (a) and the vertical dimension by a vertical factor (b), so that the resized image is a largest replica of said digitized image fitting entirely within the bounding rectangle (i.e. equation (10) resizes the image so that it has dimensions al_x and bl_y).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Venkatesan by Alghoniemy to achieve the claimed invention since Venkatesan discloses resizing the image to a fixed size prior to embedding a watermark therein, and Alghoniemy teaches that the claimed details of such a resizing process are conventional and well known to those skilled in the art. That is, Alghoniemy shows that specifying desired output dimensions, corresponding to a bounding rectangle, and then scaling the image by horizontal and

vertical magnification factors in order to resize the image so that it is the largest replica of the original image fitting entirely within the bounding rectangle is a conventional way of resizing an image to be encoded with a watermark. Alghoniemy teaches that such a normalization process allows the embedded image to be more robust to malicious attacks (see § 4).

Regarding claims 2 and 8, Algoniemy discloses forming at least one derivative copy of said watermarked image, each copy preserving the ratio of horizontal dimension to vertical dimension as nearly as practicable (figure 1: embedded image is resized to original size).

Regarding claim 3, Alghoniemy discloses that the horizontal factor and the vertical factor are equal (§ 2.2: scaling can be symmetric).

Regarding claim 4, Alghoniemy teaches that both the horizontal factor and the vertical factor can be greater than 0.125 (see e.g. figures 2 and 5).

Regarding claim 5, the combination of Venkatesan and Alghoniemy teaches an article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing watermark insertion, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 1 (see e.g. Venkatesan, column 20, line 54 et seq.).

Regarding claim 6, the combination of Venkatesan and Alghoniemy teaches a program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for watermarking, said method steps comprising the steps of claim 1 (see e.g. Venkatesan, column 20, line 54 et seq.).

Regarding claim 9, the combination of Venkatesan and Alghoniemy teaches a computer

program product comprising a computer usable medium having computer readable program code

means embodied therein for causing watermark insertion, the computer readable program code

means in said computer program product comprising computer readable program code means for

causing a computer to effect the functions of claim 7 (see e.g. Venkatesan, column 20, line 54 et

seq.).

Regarding claim 10, Venkatesan discloses a method (figure 6) comprising inserting a

watermark into at least one derivative image, including the steps of:

providing a source digital image (610) having at least one image plane, each said image

plane being represented by an array having pixel brightness data for a plurality of pixels, each of

said pixels having at least one color component and having a pixel position (column 6, lines 35-

39 and 61-64: each of Venkatesan's pixels include at least one color component and inherently

have a position within the image);

resizing the image to a fixed (rectangular) size having known horizontal and vertical

dimensions (612, figure 6, and column 14/65-66: image is normalized to a fixed size via bicubic

interpolation)

inserting into said adjusted digital image an invisible image watermark (650).

While Venkatesan teaches resizing the image to a fixed size, Venkatesan does not

expressly disclose:

specifying horizontal and vertical dimensions of a bounding rectangle;

resizing the source image by enlargement or reduction of its horizontal and vertical

dimensions to form an adjusted image so that the resized image is a largest replica of said

digitized image fitting entirely within the bounding rectangle (i.e. the horizontal and vertical

dimensions); and

producing at least one derived image by resizing the watermarked adjusted image.

Alghoniemy discloses a method (see figure 1) for normalizing an image prior to

embedding a watermark therein. Like Venkatesan, Alghoniemy normalizes the image to a fixed

size before the embedding process. In § 2.2, Alghoniemy specifies a bounding rectangle of a

normalized image having dimensions al_x and bl_y, which correspond to scaled horizontal and

vertical dimensions of the original image. Then, a resized image is formed by resizing the

horizontal dimension by a horizontal factor (a) and the vertical dimension by a vertical factor (b),

so that the resized image is a largest replica of said digitized image fitting entirely within the

bounding rectangle (i.e. equation (10) resizes the image so that it has dimensions al_x and bl_y).

After embedding, the image is restored to its original size (see figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to modify Venkatesan by Alghoniemy to achieve the claimed invention since Venkatesan

discloses resizing the image to a fixed size prior to embedding a watermark therein, and

Alghoniemy teaches that the claimed details of such a resizing process are conventional and well

known to those skilled in the art. That is, Alghoniemy shows that specifying desired output

dimensions, corresponding to a bounding rectangle, and then scaling the image by horizontal and

vertical magnification factors in order to resize the image so that it is the largest replica of the

original image fitting entirely within the bounding rectangle is a conventional way of resizing an

image to be encoded with a watermark. Alghoniemy teaches that such a normalization process

allows the embedded image to be more robust to malicious attacks (see § 4). Furthermore,

Alghoniemy shows that it is conventional to return the normalized image to its original size after

embedding – this is an obvious expedient in the situations where the user does not wish the

dimensions of the image to be changed by the watermarking process.

Regarding claim 11, the combination of Venkatesan and Alghoniemy teaches an article

of manufacture comprising a computer usable medium having computer readable program code

means embodied therein for causing watermark insertion, the computer readable program code

means in said article of manufacture comprising computer readable program code means for

causing a computer to effect the steps of claim 10 (see e.g. Venkatesan, column 20, line 54 et

seq.).

12.   Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over

"Geometric Distortion Correction Through Image Normalization" by Alghoniemy et al.

("Alghoniemy").

Regarding claims 20 and 21, Alghoniemy does not expressly disclose an article of

manufacture or program storage device for implementing the steps of claim 17, however such

methods of implementation would have been well known to those skilled in the art at the time

the invention was made. Alghoniemy's method is intended to be implemented in a computer, and

it was well known that computer-implemented methods were generally effected via computer

programs, software, and the like, as claimed. Official notice taken.

Allowable Subject Matter

13.   Claim 19 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

14.   Claim 14 would be allowable if rewritten or amended to overcome the objection thereto set forth in this Office action.

15.   Claims 12, 13, 15, and 16 are allowed. Regarding claim 12, the combination of Venkatesan and Alghoniemy does not fairly disclose or suggest the details of the forming and resizing steps, as claimed, in combination with the other limitations of the claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000. Any inquiry

of a general nature or relating to the status of this application or proceeding can also be directed

to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.

Colin M. LaRose
Group Art Unit 2624
8 January 2007